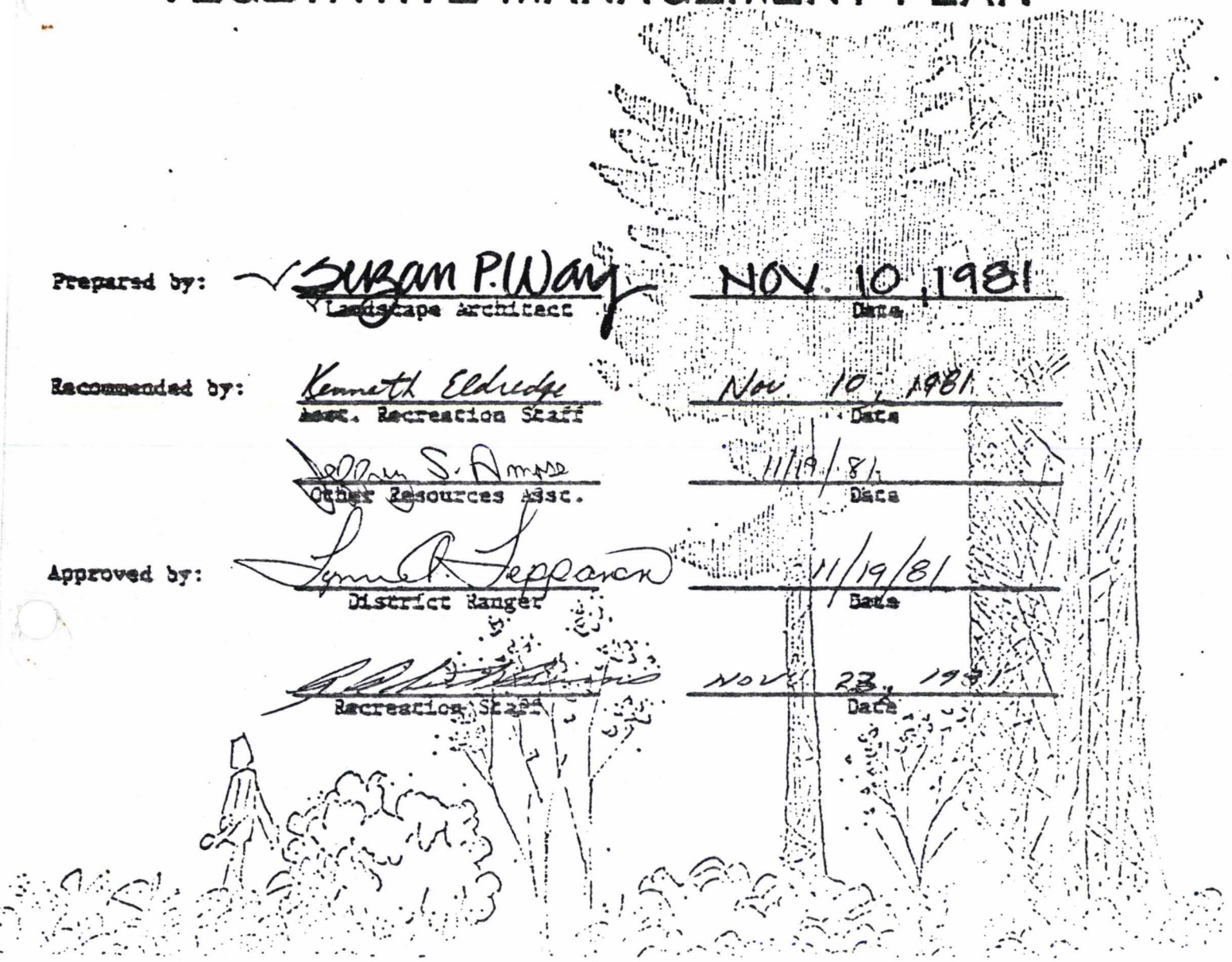
Thesis/
Reports
Wong,
S. P.

Willaby Campground Vegetative Management

Suzan P. Wong

WILLABY CAMPGROUND
VEGETATIVE MANAGEMENT PLAN



Prepared by: Suzan P. Wong — Landscape Architect — NOV. 10, 1981 — Date

Recommended by: Kenneth Eldredge — Asst. Recreation Staff — Nov. 10, 1981 — Date

LeRoy S. Amoss — Other Resources Asst. — 11/19/81 — Date

Approved by: Lynn A. Seppanen — District Ranger — 11/19/81 — Date

Recreation Staff — Nov. 23, 1981 — Date

PLANNING TEAM AND CONSULTANTS

Pete Erben - Recreation Assistant, Quinault Ranger District

Jeff Amoss - Other Resources Assistant, Quinault Ranger District

Gerry Dixon - Silviculturist, Quinault Ranger District

Suzan Wong - Landscape Architect, Olympic Supervisor's Office

Greg Filip - Plant Pathologist, Regional Office

Jim Olsen - Developed Sites, Regional Office

Jim Pollock - Landscape Management, Regional Office

USDA FOREST SERVICE
WESTFORNET-SEATTLE
FOREST RESOURCES LIBRARY, AQ-15
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

CONTENTS

I. INTRODUCTION

II. PLAN OBJECTIVES

III. VEGETATIVE MANAGEMENT OBJECTIVES

IV. VEGETATIVE CHARACTERISTICS

A. Vegetative Benefits

B. Vegetative Liabilities

V. VEGETATIVE MANAGEMENT UNITS

A. Bikini Beach

B. Lakeside

C. East Ridge

D. West Trail

E. East Trail

F. Island Screen

G. Big Trees

H. West End Screen

I. East End Screen

J. South Screen

Vegetative Management Chart

VI. THE MENU - Common Plant Materials to Choose

VII. DOCUMENTATION OF IMPLEMENTATION

A. Old-Growth Trees

B. Wildlife Trees

C. Photo Points

D. Unit Activities

VIII. APPENDIX

I. INTRODUCTION

Willaby Campground is located in the southwest corner of the Olympic National Forest. The campground is situated on a seven-acre site nestled between Quinault Lake and South Quinault Ridge. It is one of two developed sites on the south shore of the lake, and it is within the Quinault Rain Forest.

The site consists of a narrow, moderately steep strip vegetated with a mixture of large old-growth cedar, Sitka spruce and Douglas-fir. The understory consists mostly of western hemlock, vine maple, huckleberry, salal and western sword fern.

With an average annual use of over 13,000 Recreation Visitor Days, Willaby ranks third in use on the Forest. The site is planned for reconstruction in 1982. Major work will involve reconstruction of the road, camp units, parking lot for the boat ramp and the water system.

II. PLAN OBJECTIVES

The intent of this plan is to provide the manager with on-site objectives and direction for managing the vegetation within Willaby Campground. The plan will develop a long-range program to produce and maintain the desired vegetative benefits and reduce or eliminate the vegetative liabilities as soon as possible.

- The plan will identify specific areas where ground cover, shrubs, or coniferous trees should be introduced, maintained, reduced, or eliminated.

- This process will establish permanent photo points which will be used to monitor the vegetative changes over time.

- The plan will suggest treatments to reach or maintain the desired vegetative effects.

III. VEGETATIVE MANAGEMENT OBJECTIVES

- Identify and eliminate hazardous vegetation.

- Provide vistas and framed views from some camp units and locations along the trail.

- Maintain the rain forest character.

- Maintain some old-growth character.

- Maintain and/or introduce vegetative screening where appropriate.

- Provide open space and public access to the lakeshore.

- Utilize native plant material to soften large architectural structures.

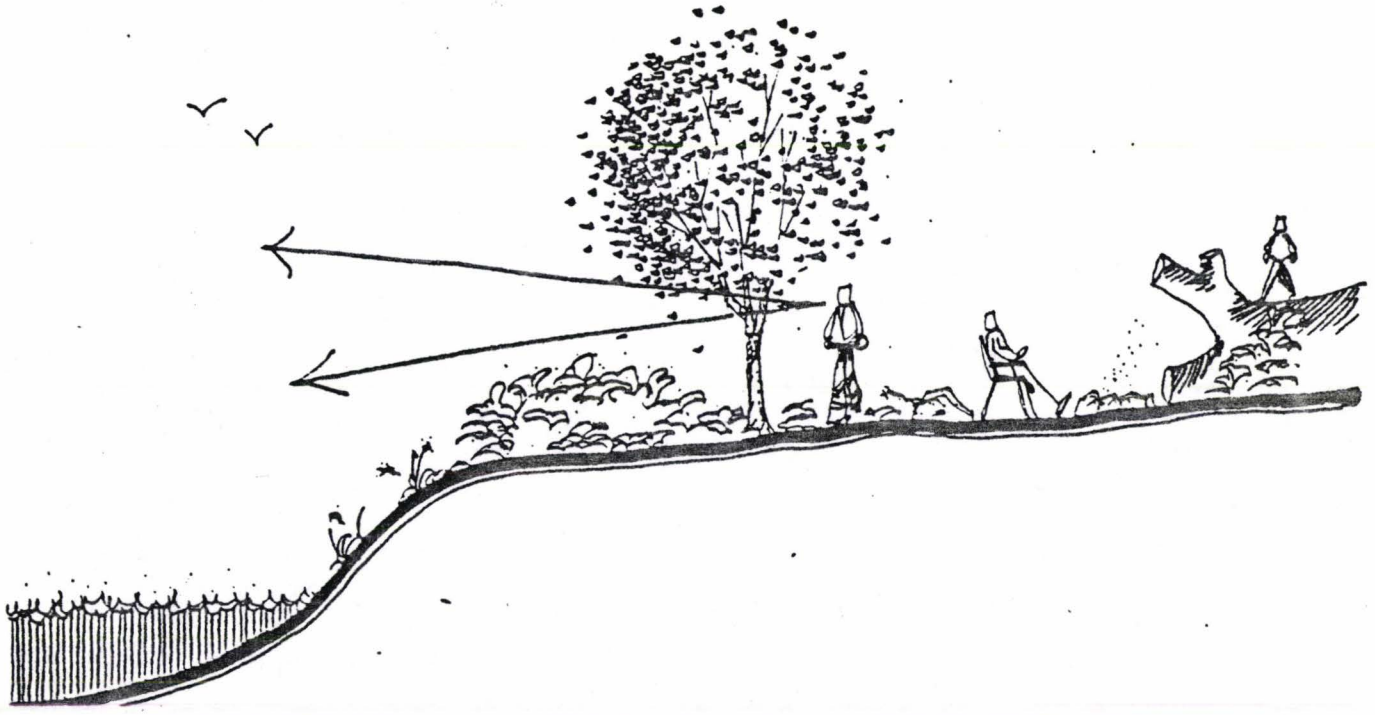
- Provide wildlife snags.

- Provide a variety of shade and sun.

- Control pedestrian and vehicular circulation with the use of vegetation.

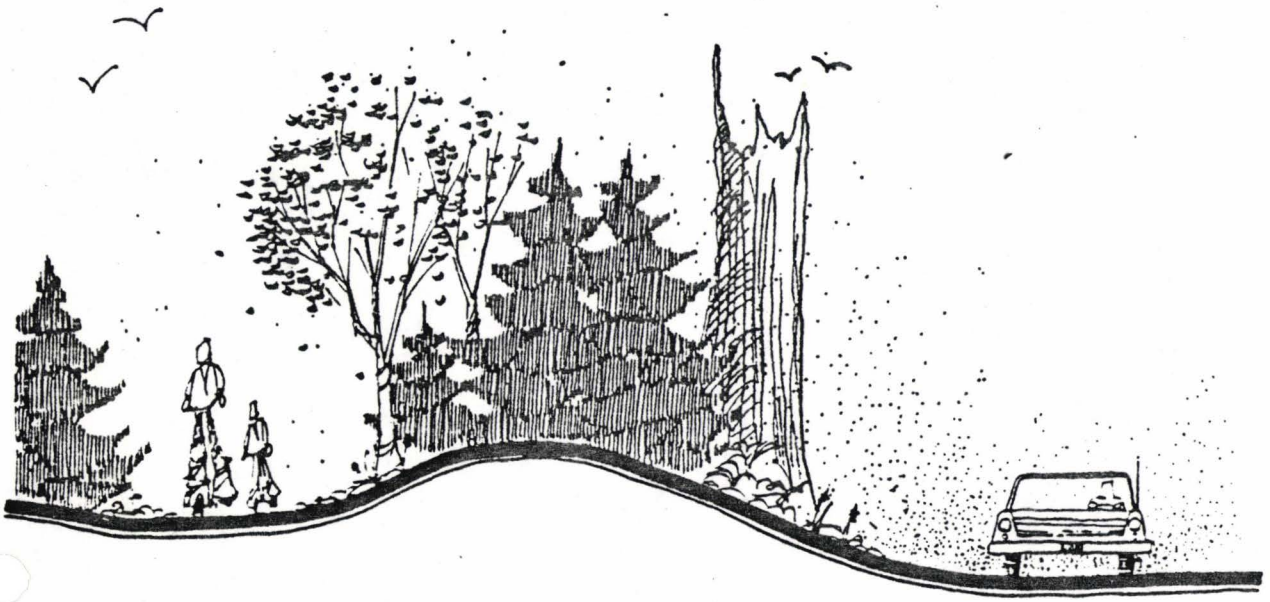
IV. VEGETATIVE CHARACTERISTICS

A. Vegetative Benefits



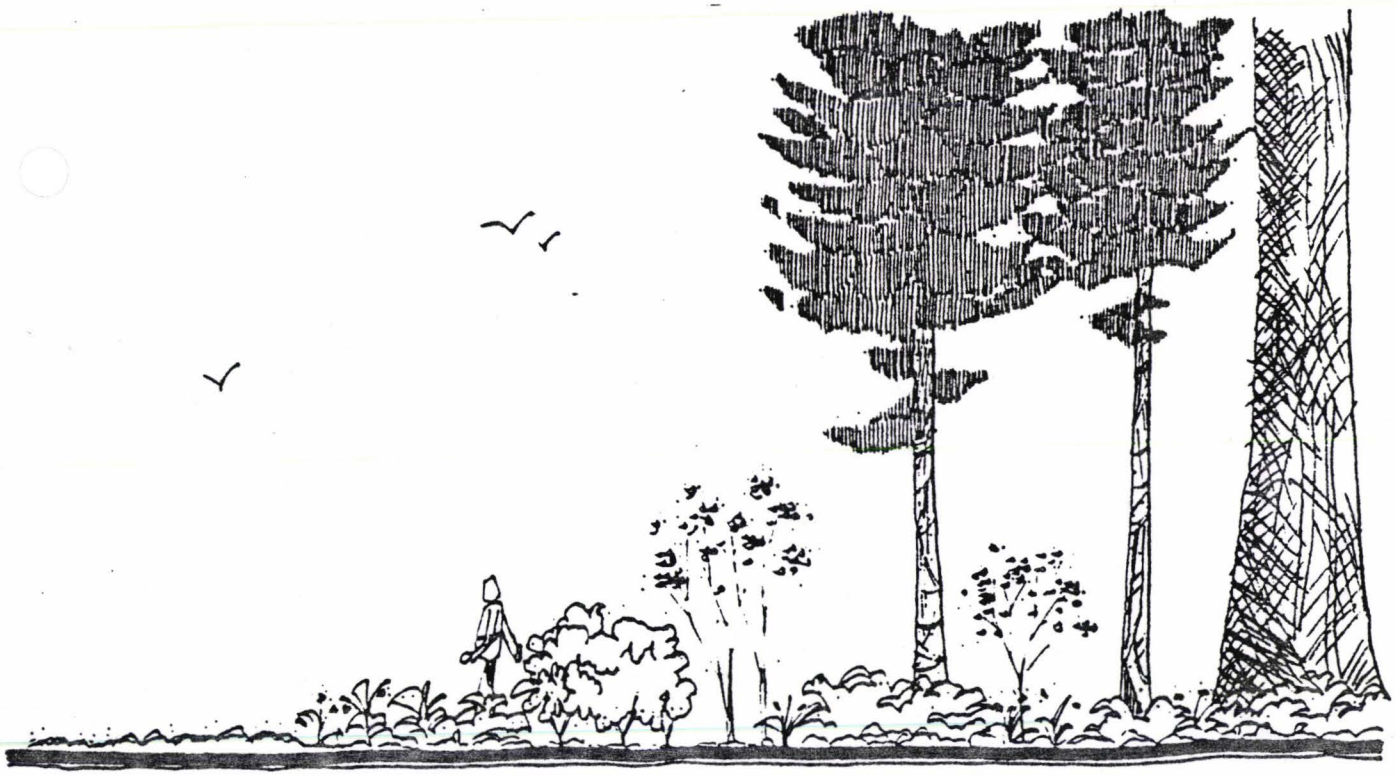
1. Leafy shrubs, tree trunks and limbs can FRAME VIEWS of Quinault Lake and surrounding mountains.

2. One or two LOGS AND STUMPS within the camp unit will provide children with natural play structures.



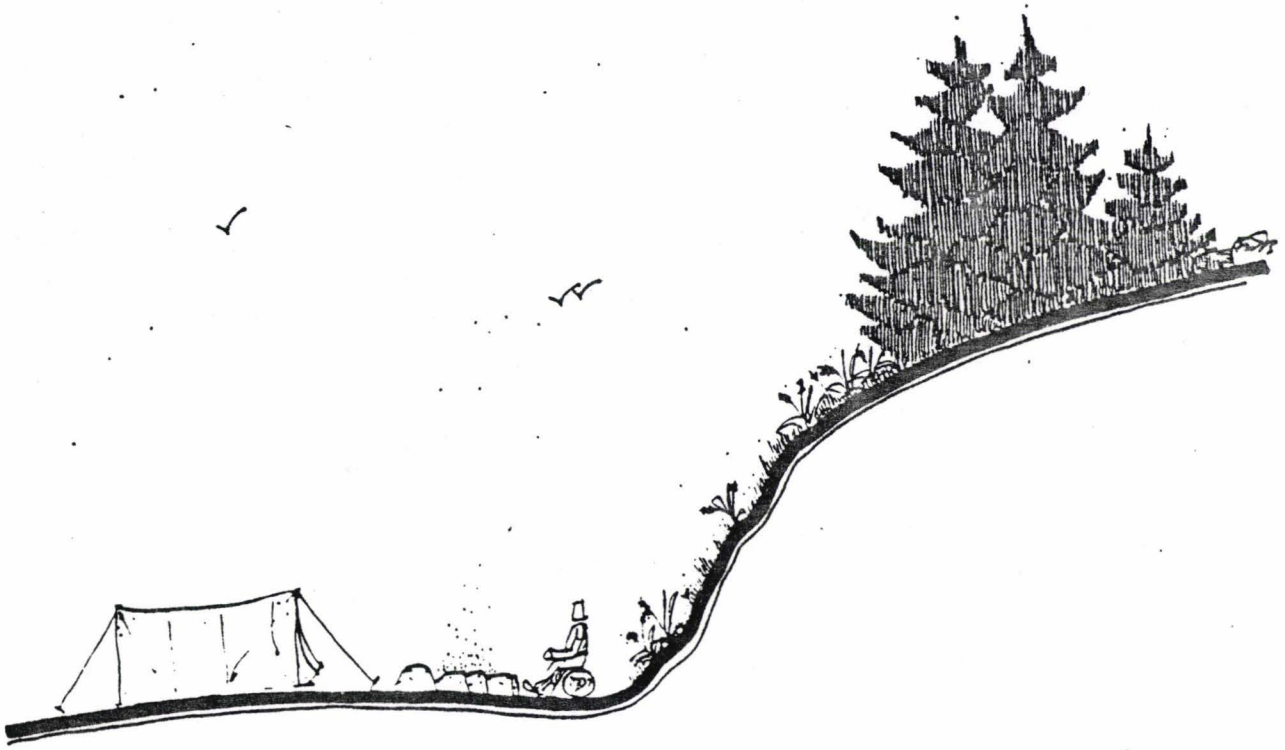
3. Deciduous shrubs and young conifers growing in low, dense clumps will provide SCREENING from roads, other units, comfort stations, and adjacent summer homes.

4. WILDLIFE SNAGS will provide habitat for small mammals and birds.

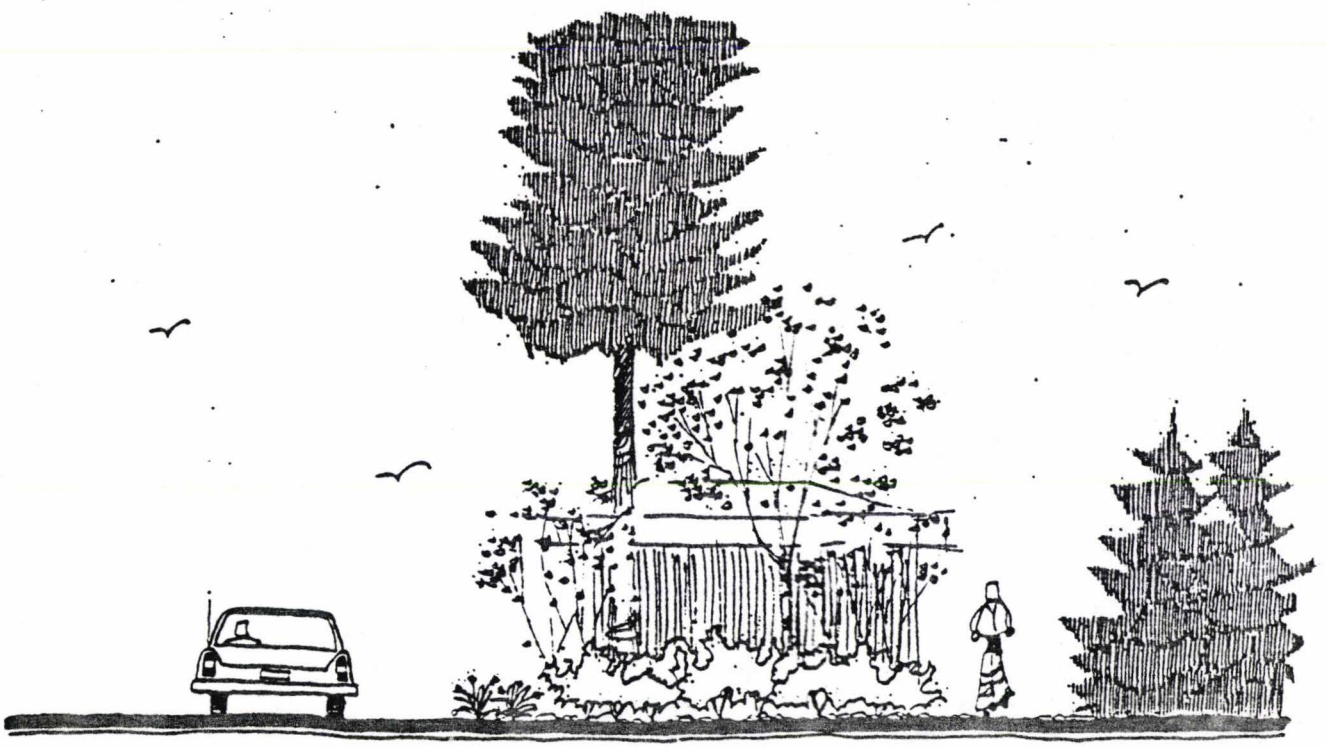


5. OLD-GROWTH TREES, those over 24" DBH, provide scale to the campground and are an essential part of the Rain Forest's character.

6. DIVERSITY OF SIZE AND SPECIES creates variety. There are many kinds of low ground cover plants and eye level shrubs which screen and create spaces. The tall tree canopies act as roofs or ceilings.

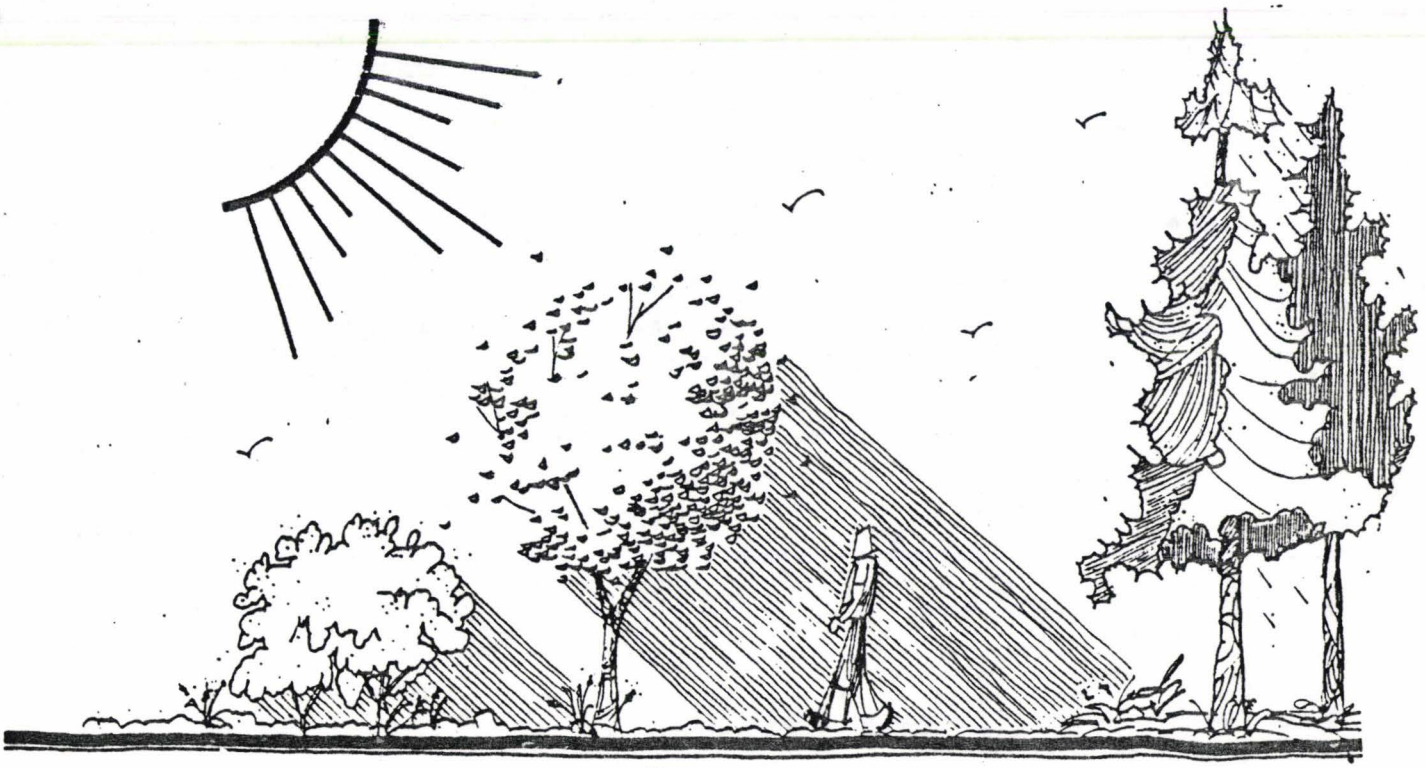


7. Ground cover, shrubs and trees all PREVENT SOIL EROSION by catching rain and wind and dissipating their energies before the soil can erode.



8. Groups of trees or brush clumps can be used as vegetative TRAFFIC CONTROLLER for pedestrians and vehicles. Strategic placement of vegetation can be used in specific ways or prevent users from going certain places.

9. Shrubs and low branching trees planted around building tend to SOFTEN BUILDINGS and given them scale.



10. Deciduous trees, especially vine maple, provide FALL COLOR. In the spring and summer the color and texture of hardwoods provide color and textural contrast against the conifers.

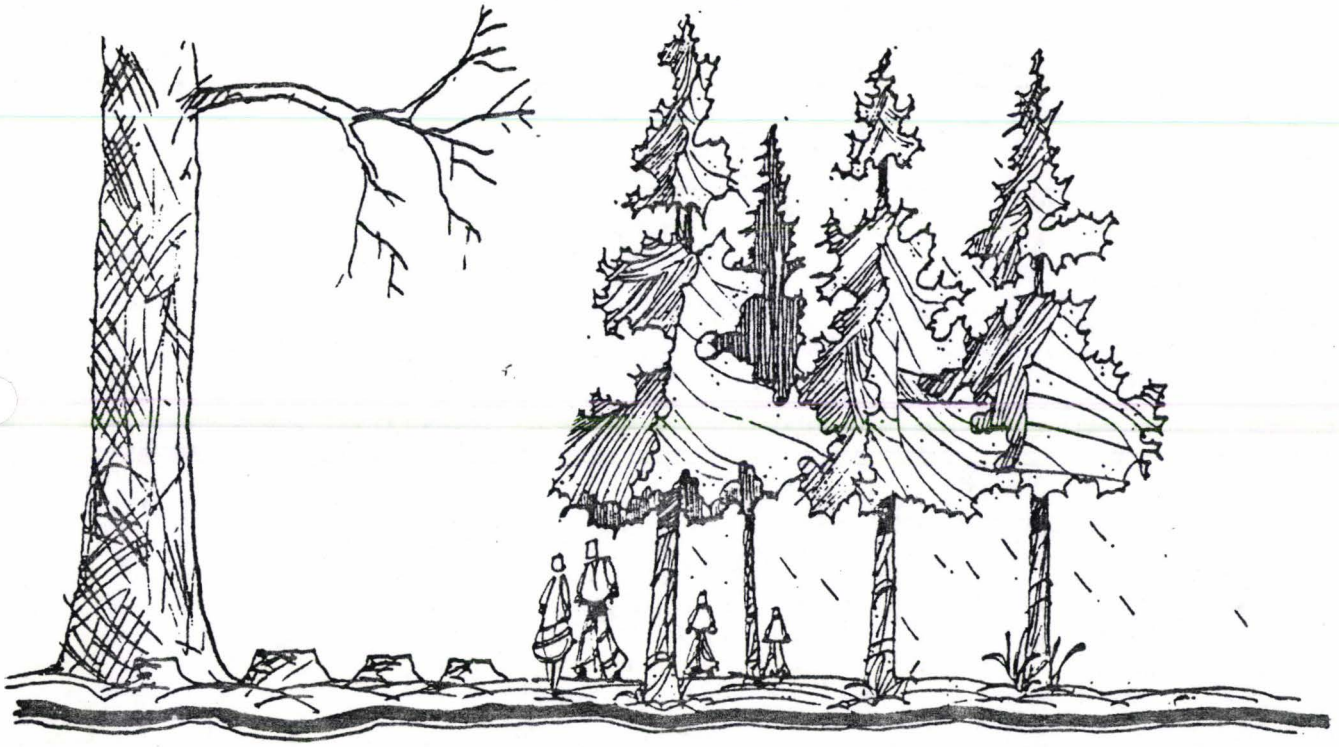
B. Vegetative Liabilities

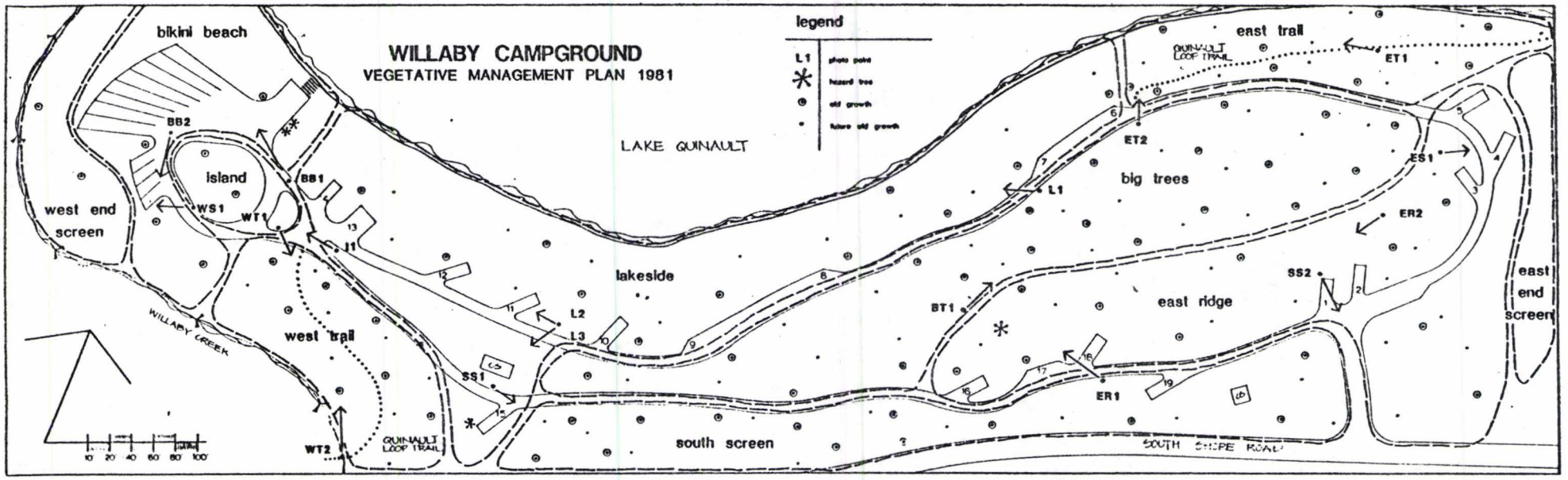
1. Dense EVEN-AGE HEMLOCK STANDS, about 50-60 years old, have little visual variety. The hemlock stand is also infected with dwarf mistletoe.

2. SEVERAL LARGE STUMPS which have been cut at uniform height tend to dominate camp units and the general landscape.

3. DENSE STANDS with solid canopies let in little sunlight for shrubs and ground cover. There are also no openings or edges to add visual variety.

4. HAZARD TREES OR LIMBS which could fall on camp units or campground facilities.




WILLABY CAMPGROUND
VEGETATIVE MANAGEMENT PLAN 1981
legend
L1
photo point
hazard tree
old growth
future old growth
bikini beach
BB2
BB1
Island
WS1
WT1
west end screen
LAKE QUINAULT
lakeside
L1
L2
L3
J1
big trees
east trail
QUINAULT LOOP TRAIL
ET1
ET2
ES1
ER2
SS2
east end screen
east ridge
BT1
ER1
west trail
WILLABY CREEK
SS1
WT2
QUINAULT LOOP TRAIL
south screen
SOUTH SHORE ROAD
10 20 40 60 80 100

V. VEGETATIVE MANAGEMENT UNITS

A. Bikini Beach

1. General Description

This unit lies in the western part of the campground. The area is generally flat and includes the "public" beach, boat ramp, boat trailer parking, and day use parking.

This area presently has several old-growth trees, clumps of alder, and other shrubs which all provide screening and traffic control. During reconstruction, most of the vegetative screening and traffic control will be cleared.

2. Vegetative Benefits Present

1. Framed Views (-), 3. Screening (-), 4. Wildlife Snags (NN), 5. Old-Growth Trees (NN), 6. Species and Size Diversity (-).

3. Vegetative Benefits Not Present

2. Logs and Stumps (NN), 7. Erosion Control (D), 8. Traffic Control (D), 9. Softening (NN), 10. Fall Color (D).

4. Vegetative Liabilities

4. Trees on Stilts (Hazard Trees)

5. Vegetative Management Direction

There are only two public boat ramps on Quinault Lake; therefore, a primary design objective for planning the campground rehabilitation has been to maximize boat trailer parking. In doing this some of the trees and potential wildlife snags have not been saved. After construction, emphasis should be on reestablishing a diverse vegetative screen. It will be possible to plant shrubs to create framed views and to influence pedestrian and motor traffic, and also to provide fall color which is presently lacking.

6. Treatments

a. Cut the trees on stilts as part of the reconstruction contract or before the contract.

b. Protect as much of the alder and shrub screen as practicable during construction. Replant after construction using ground cover and shrubs especially vine maple, maple and alder. Use willow or other water-loving species where maple and alder cannot survive. Plan the vegetation to provide some framed views and use the plant masses to direct traffic.

\+ = Too Much
OK = OK or Satisfactory
\- = Not Enough
D = Desired
NN = Not Necessary

c. Maintain the remaining large specimen trees but do not plan to replace them.

B. Lakeside

1. General Description

This unit contains the most popular campsites of the nineteen at Willaby. Nine units are perched on top of a fairly steep bank above the lake and one unit is located back from the lake above Willaby Creek. The Lakeside Unit takes in the lower comfort station. Within the camp units there has been some decline of ground cover and shrubs over the years. The vegetation has been beat out by the heavy use, and over time the use area has spread out, leaving some areas of exposed soil. In most instances there is adequate screening between units, but the screen between the units and the campground road could be improved. The area is dominated by large old-growth conifers.

2. Vegetative Benefits Present

1. Framed Views (-), 2. Logs and Stumps for Play (OK), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (OK), 7. Erosion Control (-), 8. Traffic Control (OK), 9. Softening (-), 10. Fall Color (OK).

3. Vegetative Benefits Not Present

All present.

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

This unit already has at least some of each benefit. We would like to manage the vegetation to provide more framed views, screening and erosion control. The lower comfort station needs to have paths and plant materials re-established. Plan to always have several old-growth trees throughout the unit. Maintain the same level for the rest of the benefits.

6. Treatments

a. Creating and maintaining framed views, screening, diversity of size and species, erosion control, traffic control, and providing fall color, all can be attained together. The keys are deciding where to screen and where to try to influence the traffic patterns. As part of the planting screen or traffic controlling mass, select extra vine maple for fall color, a more "people resistant" ground cover in high erosion areas, or a thorny shrub to influence traffic patterns.

b. 30" DBH or larger trees, which become hazardous, may be limbed and topped at about 30 feet or heights up into the canopy. This leaves a wildlife snag for critters and the appearance of a big tree for campers. Twenty-four-inch DBH and smaller hazard trees should generally be cut, leaving low stumps.

c. Identify and map 10-12 large, healthy, old-growth trees to assure the Rain Forest character. Identify and map future old-growth trees to be groomed as replacements for the old-growth. For each future old-growth tree write a silvicultural prescription which will help speed it along to old-growth character. Where possible select Douglas-fir and cedar.

d. Plant full branching shrubs around the comfort station to increase the softening effect. Construct paths to help keep people from tramping everywhere. Educational signing may be necessary until the plantings are massive enough.

C. East Ridge

1. General Description

This unit contains the remaining nine camp sites and is, as its name implies, on a small ridge. The units don't have direct access to the lake, but several units do have views of the lake. This units is a dense stand of second-growth hemlock which is susceptible to damage and rot. (See Hazard Tree Evaluation, 8/26/81.)

2. Vegetative Benefits Present

1. Framed Views (-), 2. Logs and Stumps for Play (OK), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (-), 8. Traffic Control (OK), 10. Fall Colors (OK).

3. Vegetative Benefits Not Present

7. Erosion Control (NN), 9. Softening (NN).

4. Vegetative Liabilities

1. Even-Aged Hemlock, 2. Groups of Large Stumps, 3. Dense Stand, 4. Hazard Trees and Limbs.

5. Vegetative Management Direction

This unit has all four categories of liabilities. The mature trees are mostly hemlock, not ideal to groom for big old-growth specimens. The stand is so dense that in some places little light is available for the understory ground cover and shrubs. The stand is also infected with dwarf mistletoe which is dormant because of lack of light. In opening up areas for camp units or to encourage the understory we will also allow the dwarf mistletoe to grow.

The long-term strategy for this unit is when a hemlock needs to be removed because of rot or it is competing with a future old-growth tree, the opportunity can be used to slowly convert the stand to CONIFERS other than hemlock and hardwoods. The conversion should be slow, with no noticeable changes in the canopy. Despite the liabilities, the East Ridge Unit has most of the vegetative benefits also. It would be desirable to maintain or increase the levels we have, particularly the benefits of screening at Units 1 and 2 and framed views at Units 5, 16, and 17.

6. Treatments

a. Plant ground cover and shrubs around the three over-dominant stumps between Units 1 and 2. Incorporate this with the screening and pedestrian control planting masses.

b. Top hazardous trees and remove hazard limbs near Units 16 and 17.

c. At Units 5, 16 and 17 identify limbs or trees to be removed or areas to be planted to create framed lake views. When planting, keep in mind screening and traffic patterns. Plant some vine maple for its fall color.

d. Identify and map 10-12 old-growth trees. Identify and map 10-12 future old-growth, replacement trees to assure the Rain Forest character. Where there is a choice, choose Douglas-fir or cedar. Write a silvicultural prescription for each future old-growth tree.

e. As a general rule, hazard trees may be handled two ways. If the tree is 30" DBH or larger, it should be considered for a wildlife snag. It should be limbed and topped at 30' or a height up in the surrounding canopy. Hazard trees 24" DBH and less should usually be felled using standard methods. Stumps should be kept as low as possible. Disturbed ground cover and shrub screens should be repaired.

f. Species and size diversity as a benefit in the East Ridge Unit can be achieved as part of the stand conversion. When a hemlock or other species becomes a hazard tree, it should be topped or felled and young trees and shrubs replanted. The number of hazard trees removed in one entry should be small enough that there is no noticeable change in the canopy.

g. Dense, bushy varieties of shrubs should be planted in designated areas to influence traffic patterns. These planted areas will be physical and visual screens. Plant some vine maple to add texture and color differences.

D. West Trail

1. General Description

This unit surrounds the Quinault Loop Trail as it leaves the campground going toward the Quinault Rain Forest Nature Trail. The trail descends from the campground road and is screened from the campground by topography as well as vegetation. Willaby Creek cannot be seen until one is almost at the foot bridge. This unit has several specimen old-growth trees and large windfalls, and the riparian type shrubs and tree canopies form a vegetative tunnel.

2. Vegetative Benefits Present

1. Framed Views (OK), 2. Logs and Stumps for Play (NN), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (OK), 8. Traffic Control (-), 10. Fall Color (OK).

3. Vegetative Benetis Not Present

7. Erosion Control (NN), 9. Softening (NN).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

Emphasis in this unit should be to add more screening at the beginning of the trail and to use vegetative masses to discourage shortcutting. Manage for large old-growth between the trail and the campground road and dense riparian shrubs between the trail and the creek. Maintain current levels of framed views, species and size, erosion control, and fall color.

6. Treatment

a. Plant ground cover, shrubs and trees at the beginning of the trail to fill in the area around the existing well.

b. Plant dense branching shrubs in unwanted spurs to encourage folks to stay on the path.

c. Identify and map 5-8 old-growth trees. Identify and MAP 5-8 future old-growth trees which will be groomed to replace the present old-growth specimens. Develop silvicultural prescriptions for all the future old-growth trees.

d. Gain wildlife snags using the typical rule: 30" DBH or larger = wildlife snag; 24" DBH or smaller = low stump.

e. Framed views, screening along the trail, species and size diversity, erosion control, and fall color seem to be maintaining a constant, satisfactory level but monitor to detect decreasing trends.

E. East Trail

1. General Description

The units runs between the campground road and the lake and contains the Quinault Loop Trail as it heads toward the Lake Quinault Lodge and the District office. There is a dense, diverse stand of trees screening most views of the lake from the trail and also screening the trail from the camp units.

2. Vegetative Benefits Present

1. Framed Views (-), 2. Logs and Stumps for Play (NN), 3. Screening (OK), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (OK), 8. Traffic Control (OK), 10. Fall Color (OK).

3. Vegetative Benefits Not Present

7. Erosion Control (D), 9. Softening (NN).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

Emphasis should be placed on creating more framed views maintaining a diverse stand and maintaining old-growth trees.

6. Treatment

a. Select plants and limbs to remove to create framed views.

F. Island

1. General Description

The Island Management Unit separates the campground from the day-use/boat launch area. It is fairly flat and covered with dense shrubs and contains several large specimen trees.

2. Vegetative Benefits Present

1. Framed Views (NN), 2. Logs and Stumps for Play (NN), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (NN), 6. Species and Size Diversity (OK), 8. Traffic Control (-).

3. Vegetative Benefits Not Present

7. Erosion Control (NN), 9. Softening (NN), 10. Fall Color (D)

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

The primary function of this unit is to provide visual and spacial screening. Use a wide variety of vegetation such as ground cover, shrubs, coniferours trees, and especially vine maple, to increase the amount of vegetation to its optimum level. Wildlife snags are appropriate. The existing old-growth trees will be maintained but will not be replaced.

6. Treatment

a. Plant and prune to create a multi-level, multi-species plant mass.

b. Trees 30" DBH and larger, which are determined hazardous, should be considered for wildlife snag. The unit is small, so limit the wildlife snags to two or three at any one time. Small hazard trees should be cut, leaving short stumps.

c. Before removing trees or shrub mass, consider its effect on pedestrian and vehicle flow. Large logs can be left to control traffic.

G. Big Trees

1. General Description

The Big Trees Unit is situated in the middle of the campground and is bordered by the Lakeside and East Trail Units and the South Screen and East Ridge Units. This unit contains no camp units, trails or buildings. The unit has steep slopes which are covered with vine maple, pole sized conifers, and immense Douglas-fir and spruce.

2. Vegetative Benefits Present

1. Framed Views (-), 2. Logs and Stumps for Play (NN), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (OK), 8. Traffic Control (OK), 10. Fall Color (OK).

3. Vegetative Benefits Not Present

7 - Erosion Control (D), 9 - Softening (NN).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

This unit has no developed recreation, so there are no specific framed views from within the unit, but there are some opportunities to manipulate the Big Tree Unit to provide framed views from Units 16 and 17 which are in the East Ridge Unit.

The most important elements in this unit are screening and old-growth trees.

6. Treatment

a. Cut selected limbs to create framed views from Units 16 and 17.

b. Prune to encourage or plant a broad selection of shrubs and trees for sreening and diversity. Use some vine maple to provide color and texture difference.

c. Create wildlife snags from future hazard trees using the 30"+ = high snag, 24"- = low stump, rule of thumb.

d. Identify and map 15-20 old-growth trees. Identify and map 15-20 future old-growth replacement trees. Write a silvicultural prescription for each future old-growth tree.

e. Plant leafy shrubs and ground cover in places with erosion problems. Also use plant mass to discourage "cut across" trails.

H. West End Screen

1. General Description

This unit lies between the Bikini Beach Unit and Willaby Creek. Across Willaby Creek there is a recreation residence. The land is fairly flat and is totally within the Quinault Lake flood plain. The West End Screen consists of dense hardwood and shrubs.

2. Vegetative Benefits Present

2. Logs and Stumps for Play (NN), 3. Screening (-), 4. Wildlife Snags (NN), 5. Old-Growth Trees (NN), 6. Species and Size Diversity (-).

3. Vegetative Benefits Not Present

1. Framed Views (NN), 7. Erosion Control (NN), 8. Traffic Control (NN), 9. Softening (NN), 10. Fall Color (D).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

The main function of this unit is to screen the day-use area from the recreation residence and vice versa. The present screen is weak at the upper heights. The direction is to retain the dense ground vegetation while adding a tall dense canopy to block the views.

6. Treatment

a. Encourage trees which are 20 feet and taller by selective pruning or planting. Plant cedar, big leaf maple and vine maple.

b. When planting and pruning, check that a variety of species and sizes is maintained.

I. East End Screen

1. General Descripiton

This unit forms the border between the campground and the adjacent recreation residence. The unit slopes down toward the recreation residence and is covered with tall sparse hemlock whose canopy is too high to provide screening between the campground and the residence. The dense canopy has also prevented the growth of vine maple and other understory shrubs.

2. Vegetative Benefits Present

3. Screening (-), 4. Wildlife Snags (NN), 6. Species and Size Diversity (OK), 10. Fall Color (-).

3. Vegetative Benefits Not Present

1. Framed Views (NN), 2. Logs and Stumps for Play (NN), 5. Old-Growth Trees (NN), 7. Erosion Control (NN), 8. Traffic Control (NN), 9. Softening (NN).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

The existing tree canopies are too high to provide screening and too dense to allow a healthy understory. A very slow overstory removal is recommended; no more than five trees per year. This will be a small enough change that it should not be offensive to the recreation residence, and it will allow more light for the understory.

6. Treatment

a. Coordinate the overstory removal with the annual hazard tree evaluation and cutting. Remove no more than five trees per year, until the understory screen is dense enough to screen the campground from the recreation residence. Discontinue the overstory removal when sufficient screening is achieved.

b. Plant hemlock, vine maple and Douglas-fir.

J. South Screen

1. General Description

This unit separates the upper campground road from the South Shore Road. The parking spur for Unit 19 is within the South Screen, but there are no camp units. The smaller comfort station is also part of the South Screen. The eastern portion of the unit is a two-storied stand of mature hemlock with a shrub understory. The rest of the stand is multi-storied and composed of hardwoods, conifers and shrubs.

2. Vegetative Benefits Present

1. Framed Views (NN), 2. Logs and Stumps for Play (NN), 3. Screening (-), 4. Wildlife Snags (OK), 5. Old-Growth Trees (OK), 6. Species and Size Diversity (OK), 9. Softening (-).

3. Vegetative Benefits Not Present

7. Erosion Control (NN), 8. Traffic Control (NN), 10. Fall Color (D).

4. Vegetative Liabilities

None.

5. Vegetative Management Direction

The western portion of the unit works fairly well the way it is. Continue to maintain a screen of hardwoods, conifers, shrubs, and ground cover.

In the eastern half more screening is required, particularly near the comfort station and the new and old entrances.

6. Treatment

a. Create a denser screen in the eastern portion by planting and pruning to encourage the full variety of vegetation. Favor vine maple.

b. Manage hazard trees using 30"+ = high wildlife snags, 24"- = low stumps.

c. Identify and map 12-15 old-growth trees. Identify and map 12-15 future old-growth replacement trees. Write silvicultural prescriptions for all the future old-growth trees. Choose Douglas-fir and cedar when possible.

d. Establish permanent photo monitoring points to detect increases or decreases in vegetation.

The following chart gives a brief summary of the vegetative benefits and liabilities divided in two categories, present or not present.

If the benefits of vegetation are present in a management unit in 1981, the level is either too much, satisfactory, or not enough.

If a benefit is not present, then it is either desired or not necessary to the unit.

Primary emphasis should be given to the circled items which are generally: not enough framed views, not enough screening, not enough vegetative softening around comfort stations, and selecting trees to be protected as old-growth and future old-growth specimens.

VEGETATIVE MANAGEMENT UNITS

BENEFITS

	1. FRAMED VIEWS	2. LOGS AND STUMP FOR PLAY	3. SCREENING	4. WILDLIFE SNAGS	5. OLD-GROWTH TREES	6. SPECIES AND SIZE DIVERSITY	7. EROSION CONTROL	8. TRAFFIC CONTROL	9. SOFTENING	10. FALL COLOR
A. BIKINI BEACH	(P) / –	NP / NN	(P) / –	P / NN	P / NN	P / –	NP / D	NP / D	NP / NN	NP / D
B. LAKESIDE	(P) / –	P / OK	(P) / –	P / OK	(P) / OK	P / OK	P / –	P / OK	(P) / –	P / OK
C. EAST RIDGE	(P) / –	P / OK	(P) / –	P / OK	(P) / OK	P / –	NP / NN	P / OK	NP / NN	P / OK
D. WEST TRAIL	P / OK	P / NN	(P) / –	P / OK	(P) / OK	P / OK	NP / NN	P / –	NP / NN	P / OK
E. EAST TRAIL	(P) / –	P / NN	P / OK	P / OK	(P) / OK	P / OK	NP / D	P / OK	NP / NN	P / OK
F. ISLAND	P / NN	P / NN	(P) / –	P / OK	P / NN	P / OK	NP / NN	P / –	NP / NN	NP / D
G. BIG TREES	(P) / –	P / NN	(P) / –	P / OK	(P) / OK	P / OK	NP / D	P / OK	NP / NN	P / OK
H. WEST END SCREEN	NP / NN	P / NN	(P) / –	P / NN	P / NN	P / –	NP / NN	NP / NN	NP / NN	NP / D
I. EAST END SCREEN	NP / NN	NP / NN	(P) / –	P / NN	NP / NN	P / OK	NP / NN	NP / NN	NP / NN	P / –
J. SOUTH SCREEN	P / NN	P / NN	(P) / –	P / OK	(P) / OK	P / OK	NP / NN	NP / NN	(P) / –	NP / D

LIABILITIES

	1. EVEN-AGED HEMLOCK	2. TOO MANY STUMPS	3. DENSE STAND	4. HAZARD TREES AND LIMB
A. BIKINI BEACH	NP	NP	NP	(P)
B. LAKESIDE	NP	NP	NP	NP
C. EAST RIDGE	P	(P)	P	(P)
D. WEST TRAIL	NP	NP	NP	NP
E. EAST TRAIL	NP	NP	NP	NP
F. ISLAND	NP	NP	NP	NP
G. BIG TREES	NP	NP	NP	NP
H. WEST END SCREEN	NP	NP	NP	NP
I. EAST END SCREEN	NP	NP	NP	NP
J. SOUTH SCREEN	NP	NP	NP	NP

P = PRESENT
\+ = too much
OK = satisfactory
– = not enough

NP = NOT PRESENT
D = desired
NN = not necessary
◯ = primary emphasis

VI. THE MENU:

Common Plant Materials to Choose From

Below is a list and brief description of some of the more common plants found in the Quinault area. Use this to help decide what kind of plants to encourage and transplant. These are not the only species found at Willaby Campground, so don't be afraid to experiment with other plants.

A. Ground Covers

Salal: 6"-24". Thick, tough leaves. Evergreen. Excellent for heavy use areas. Sun or shade.

Oxalis: 4"-6". Shade loving. Delicate heart-shaped leaves. Spreads quickly but not too impact resistant.

Piggy Back or Youth on Age: 12"-18". Young leaves grow out from old leaves. Grows in round clumps. Leaves and stems fairly delicate. Shade or partial sun.

Buttercup: 4"-6". Three lobed leaf. Flowers are shiny, brilliant yellow. Moderately tolerant of impact. Prefers sun.

Western Swordfern: 18"-24". 3' fronds radiate from the center. Evergreen. Good plant in heavy use areas. Sun or shade.

Deer Fern: 36". Tall central spore fronds stand vertically while the non-fertile fronds lay low to the ground. Not as sturdy as the sword-fern but can tolerate light impact.

Oregon Grape: 18"-24". Stiff, dull, holly-shaped leaflets. Sturdy, impact reistant plant. Sun or shade.

B. Shrubs

Salal: 12"-24"+. Leaves are thick and tough. The stems are flexible and strong. Evergreen. Excellent for resisting impact. Sun or shade.

Salmonberry: 6'-8'. Very dense, leafy plant with a few thorns. Many reddish flowers in spring. Excellent plant for screening and traffic control. Generally found in open sunny areas.

Huckleberry: 2'-4'. Compact upright form. Many small leaves. Can tolerate shade.

Devil's Club: 6'+. Large leaves with thorns. Thick woody stems with many thorns. Prefers wet swampy soils. Excellent to deter use from an area.

Red Currant: 3'-5'. Dense, leafy plant. Open, sunny areas. Good for screening mass.

Gooseberry: 4'-6'. Single spine at joint. Leafy. Good plant to use in a screening mass.

Tall Mahonia: 12"-24". Thick, tough, shiny holly-shaped leaves. Fairly sturdy plant. Sun or shade.

Western Swordfern: 18"-24". 3' fronds radiate from the center. Evergreen. Good plant in heavy use areas.

C. Trees

Douglas-fir: up to 200'. As young tree the branches form good visual screens. At Willaby, Douglas-fir is preferred over hemlock and spruce because it is more pest and disease resistant.

Cedar: up to 150'. Young trees are generally full and low branching so they work very well in screens. Also preferred over hemlock and spruce because it is pest and disease resistant.

Western Hemlock: up to 150'. Very shade tolerant. Soft wispy branches. As a young tree it is full and low branching and creates a very thick screen. As a mature stand hemlock is less desirable due to the dwarf mistletoe infestation, and its susceptability to rot when it is wounded.

Sitka Spruce: up to 150'. Shallow rooted and susceptible to rot.

Black Cotton Wood: up to 100'. Found in riparian zones. Fast growing. Shiny, triangular leaves. Good for screening masses.

Pacific Willow: up 30'. Found in riparian zones. Thin pointed leaves. Good for screening masses.

Red Alder: up to 50'. Found along roads and riparian zones. Fast growing. Good for screening masses.

Big Leaf Maple: up to 75'. Broad canopy. Large leaves. Good canopy tree. Fall canopy.

Vine Maple: 10'-20'. Green to reddish leaves, delicate texture. Grows in clumps. Good screening plant and also adds to variety. Excellent fall colors.

VII. DOCUMENTATION OF IMPLEMENTATION

OLD-GROWTH TREES

ID NO.	SPECIES	DBH	HEIGHT	REMARKS

FUTURE OLD-GROWTH

NO:

EC :

H:

IGHT:

TAG LOCATION:

ESCRIPTION:

NO:

E S:

H:

IGHT:

TAG LOCATION:

ESCRIPTION:

WILDLIFE TREES

LOCATION & MGMT. UNIT	DBH	HEIGHT	USE

PERMANENT PHOTO POINT RECORD

P. NAME:

NERAL LOCATION:

FERENCE POINT 1:

FERENCE POINT 2:

RECTION OF VIEW:

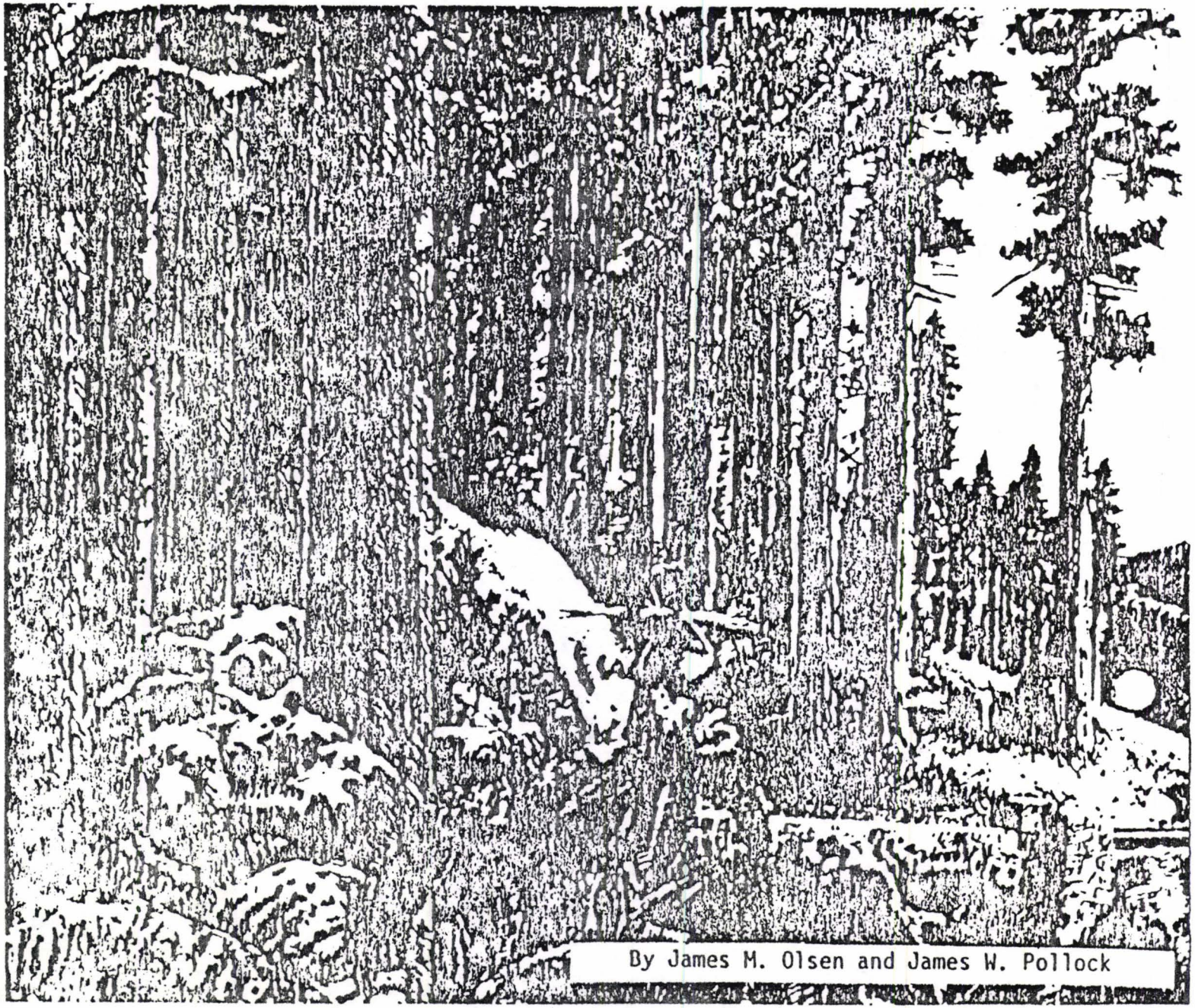
PE OF FILM: TYPE OF LENS:

RECORD OF ACTIVITIES

MANAGEMENT UNIT: PROPOSED ACTIVITY	SCHEDULED DATE	EVALUATION

APPENDIX

MANAGING VEGETATION IN FORESTED RECREATION SITES

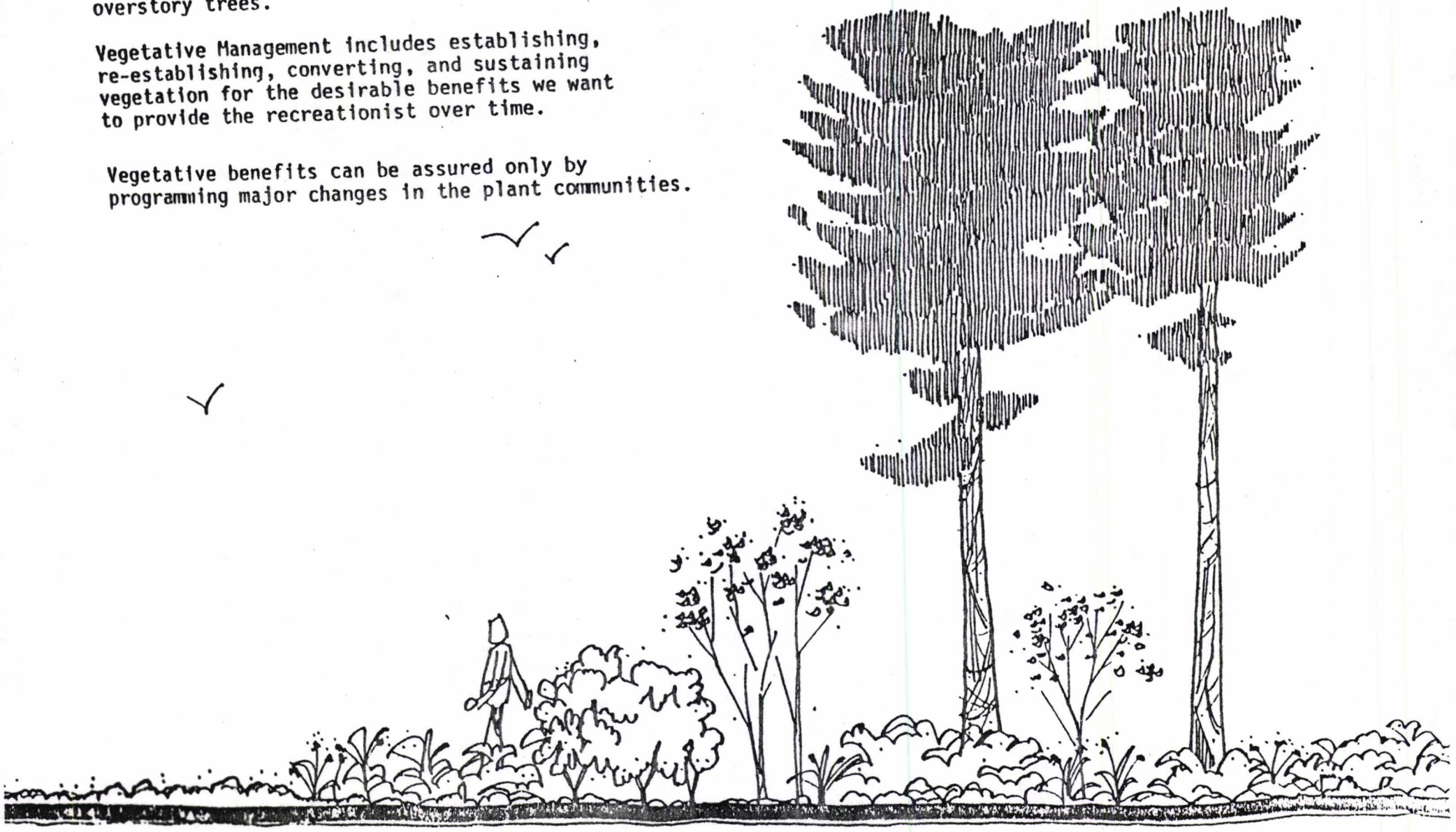


By James M. Olsen and James W. Pollock

Vegetative Management includes all the levels of vegetation from the small ground cover, to the grass and shrubs, to the understory and overstory trees.

Vegetative Management includes establishing, re-establishing, converting, and sustaining vegetation for the desirable benefits we want to provide the recreationist over time.

Vegetative benefits can be assured only by programming major changes in the plant communities.



VEGETATIVE BENEFITS

SENSORY

The vegetation in a recreation site provides the visitor with many benefits. These benefits help to make the recreation visit more enjoyable by providing a relaxing atmosphere, comfort and beautiful surroundings.

The benefits fall into three categories which we will call sensory, physical, and visual.

Let's briefly touch on each of these. The sensory includes: smell, hearing, touch, and taste.

Don't you love the smells of the outdoors? - Spring flowers, decaying wood, pine needles, or sage brush. You know you are in the outdoors when you can smell it.

Plants provide you with important mood setting sounds such as the rustling of leaves in the wind.

The touch of plants is important too - who doesn't like the feel of grass on your bare feet? Or the strength of an old tree as you climb it.

Although we generally don't go to a recreation area for a sense of taste, who can resist fresh berries for a camp breakfast?

VISUAL

Like the sensation of outdoor space created by plants. These may be big spaces such as a meadow surrounded by forest or small spaces such as a picnic unit surrounded by shrubs. These spaces are an important part of enjoying the forested environment.

Plants can also be used to frame and heighten views. Don't we all look for that camp site with a tree framed view of a mountain peak or alpine lake?

We also look for sites that give us privacy and are screened from objectionable views. Shrubs and low trees are especially useful for privacy control and visual screening.

Softening! The structures and buildings in our recreation areas fit best with the softening and blending effect of plants.

PHYSICAL

The physical benefits! You and I daily experience the benefits of vegetation. Although most of us probably consider shade the most important, there are many others which may be more important to us in certain situations.

We have waited under the shade of a tree on a hot summer day. Plants block or filter the sun's radiation by both absorbing and reflecting sunlight. By doing this they reduce the heat and strong glare. In recreation sites we often use deciduous trees that provide this welcomed summer shade, but drop their leaves and let in the welcomed winter sun.

Plants provide the forest visitor with protection from rain. I am sure you have all stood under a tree waiting for a sudden rain shower to pass. Plants absorb between 20 to 40 percent of a medium to heavy rainfall by trapping and holding rain droplets.

Have you ever slept in a tent with the wind beating on it all night? The wind can be controlled with plants. They can reduce or divert the wind flow. This is especially important in areas where there are strong prevailing winds. Usually we want to channel the wind away from the recreationist but there are situations when we want to channel the wind to him as a cooling element.

Most of us seek a recreation area sheltered from noise. Plants are somewhat effective in absorbing and scattering noise. This may be noise from outside the recreation area such as an adjacent highway or noise generated within the area.

Plants cleanse our air of smoke, dust and odors. In dusty recreation sites or those with unpaved roads we can very effectively use plants to trap and screen the dust particles.

Recreation site construction and recreation use can expose the soil surface to water, wind and people caused erosion. A good cover of plants such as grasses and ground covers can reduce or eliminate this erosion.

Plants control the movement of people, bicycles and vehicles in recreation areas. We can use them to direct pedestrians, such as a shrub enclosed path, or to restrict vehicles such as large trees along the road.

THE RECIPE

The benefits are achieved with a good recipe! The recipe to development of a good vegetative management plan involves the combined skills of several cooks - such as a Forester, a landscape architect and a recreation manager.

The recipe is diagramed here in a linear sequence, but in reality there would probably be some cycling back as steps are developed, tht require going back to modify a previous step. (HOLD)

The first step is to define the limits of the area to be managed.

This goes beyond the limits of the recreation developments themselves to include the surrounding vegetation that enhances the recreation experience.

Next, define the management goals and objectives for the recreation area.

To be realistic, we must consider all the possible management objectives such as: wildlife habitat or water quality. We must integrate these objectives with our vegetative and recreation objectives.

Now, we must divide up the area to be managed into biological units.

These units are identified according to changes in vegetative cover, slope, rockforms, waterforms, and other biological factors.

area needs to be analyzed to identify the existing vegetative benefits and liabilities the area.

The benefits, such as summer shade, fall color and privacy screening; and the liabilities such as poison oak and hazard trees, need to be listed and located.

Now we must analyze the management objectives together with the existing vegetative benefits & liabilities and determine what desired vegetative benefits we wish to retain or create over time.

We must now identify the management units we will use to provide the desired benefits. These management units are a subdivision of the biological units that will be manipulated to meet the management objectives.

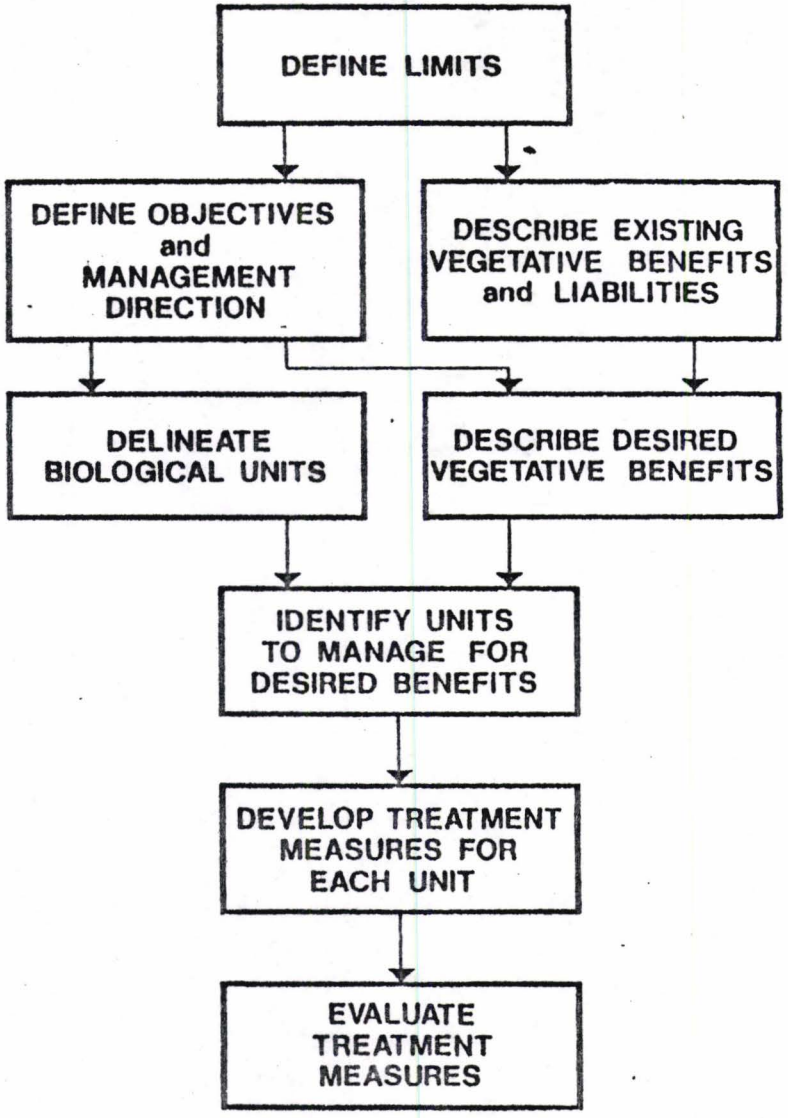
The desired benefits will be achieved by manipulation of each management unit. Each unit usually cannot provide all the desired benefits, but will provide some in any time period. Together all the units will provide all the desired benefits over time. In this example, unit 3 will be managed to provide four benefits.

In order for each unit to provide the desired benefits we must describe the vegetative management direction for each unit.

We can now develop a plan for specific treatment measures for each unit and the quality standards for each of these.

These treatment measures include plant removal such as a small clear cut. Plant addition such as seeding or planting. Plant maintenance such as watering or spraying for insects and plant controlling such as selective burning.

The never ending final step is to evaluate and monitor the treatment measures over time and to adjust the management plan as necessary to reflect unforeseen problems, unsuccessful treatments, new technology or changing management strategies.


DEFINE LIMITS
DEFINE OBJECTIVES and MANAGEMENT DIRECTION
DESCRIBE EXISTING VEGETATIVE BENEFITS and LIABILITIES
DELINEATE BIOLOGICAL UNITS
DESCRIBE DESIRED VEGETATIVE BENEFITS
IDENTIFY UNITS TO MANAGE FOR DESIRED BENEFITS
DEVELOP TREATMENT MEASURES FOR EACH UNIT
EVALUATE TREATMENT MEASURES

Olympic SO
Susan Wong

3430 Evaluation

August 26, 1981

Hazard Tree Evaluation – Quinault Ranger District

Forest Supervisor, Olympic NF

On August 10-12, Gregory M. Filip, Plant Pathologist with Forest Pest Management at the Regional Office, participated in a vegetative management session concerning Willaby Campground on the Quinault Ranger District, Olympic National Forest. Purpose of the session was to develop a plan for present and future management of all vegetation, including hazard trees, in the Willaby Campground. Others who participated actively in the session included Jim Pollack, Head of Landscape Management at the RO; Jim Olsen, Developed Sites Specialist at the RO; Susan Wong, Recreation Specialist at the SO; Jeff Amoss, Recreation Specialist at the District; and Gerry Dixon, District Silviculturist.

Willaby Campground is located in a stand composed of old-growth western hemlock, western redcedar, Douglas-fir, and Sitka spruce; and second-growth cedar, hemlock, and Douglas-fir. The existing campground will be redesigned with new roads, a new water system, and new camping and picnic units. While developing a vegetative management plan for the campground, hazard trees were evaluated.

A major portion of the east end of the campground is composed of second-growth hemlock infected with dwarf mistletoe (*Arceuthobium tsugense*). Trees with dwarf mistletoe do not become immediately hazardous after infection. However, severe infestations of dwarf mistletoe may result in reduced tree vigor and predispose infected trees to other serious pests such as root rots or bark beetles. Branches infected by dwarf mistletoe grow abnormally and can reach large size. Such branches are more likely to fail than healthy branches.

Dwarf mistletoes, being higher seed plants with chlorophyll, require light in order to produce aerial shoots and seeds. Mistletoe seeds do not require much light to germinate and infect host tissue. However, new infections will not produce aerial shoots until the proper amount of light is attained. A dense stand of infected trees such as the one in Willaby Campground will have several dormant infections until more light is provided. If the infested stand is opened up through the removal of some trees to form new units, the dormant infections in the residual stand will produce aerial shoots, resulting in what appears to be several new infections. The aerial shoots will produce seeds and the infestation will intensify. Trees with several active infections will then have a greater chance of being attacked by other serious pests because of reduced vigor.

One large Sitka spruce had a large bole wound with visible rot 30 to 40 feet above the ground. Although this tree was not adjacent to any existing unit, a new unit is planned near the tree. It is recommended that the tree be cut just below the large wound to reduce the chance of the tree failing. This will provide a snag for wildlife and retain the character of the site.

Two or three hemlocks appeared to have grown on the stumps of old-growth trees such that their root systems were exposed. Such trees appeared to be on "stilts." It is not certain whether this condition renders the trees prone to windthrow. However, removal of such trees should be considered if they are adjacent to valuable targets such as one tree near the boat ramp parking lot.

In general, there were very few high hazard trees or large hazardous limbs remaining in Willaby Campground, probably as a result of the conscientious District program to immediately treat hazardous situations. As part of the vegetative management plan, it was suggested that future hazard trees be treated by topping to leave a 20-30-foot snag to provide habitat for wildlife and retain part of the tree so as not to totally alter the character of the site.

Two other sites were examined following the vegetative management session. The first site was the proposed Willaby Flats Campground. The site is presently undeveloped and will contain 40 units. The stand which will contain the campground is composed of old-growth Sitka spruce, Douglas-fir, and western redcedar with a dense second-growth stand of hemlock. Dwarf mistletoe was observed in the hemlock with some trees having large dead witches'-brooms caused by the mistletoe. A few large spruce or Douglas-fir snags were found scattered throughout the area. No root disease centers or an excessive number of wounded trees were found on the site.

Although there were no disease or insect conditions that would limit using the site for a campground, western hemlock is not a preferred species in which to locate a developed recreation site. Besides the problems associated with dwarf mistletoe as discussed for the Willaby Campground, western hemlock is especially prone to heartrot associated with tree wounding. Spruce is also quite susceptible to stem decays. Ranking tree species on the site for susceptibility to heartrot from most to least would be as follows: hemlock, spruce, Douglas-fir, and cedar.

For the proposed Willaby Flats Campground, we recommend that (1) all large snags be removed or topped if adjacent to units, (2) large dead dwarf mistletoe brooms be removed if over units, (3) care should be taken to prevent excessive wounding of residual trees during campground construction activities, (4) residual trees should be preferably cedar or fir with hemlock chosen last, and (5) the site be evaluated yearly for hazard trees after development.

A third campground that was examined was the Olallie Campground which had been closed due to the prevalence of hazard trees. The campground contains several large old-growth snags of Douglas-fir. Many of the living old-growth Douglas-fir had dead tops. One large tree had fallen across the campground and appeared to be infected with *Phaeolus schweinitzii*, causal agent of butt rot in old-growth Douglas-fir.

In general, the entire old-growth stand of Douglas-fir in Olallie Campground is in a state of decline. Although not extensively examined, it is possible that most of the old-growth stand is infected with *P. schweinitzii* which is a common problem in old-growth Douglas-fir. The District plans to contact FPM pathologists to conduct a more detailed hazard tree analysis of the campground if they decide to reopen the facility.

If Forest Pest Management can be of further assistance, please contact us.

PAUL E. BUFFAM

PAUL E. BUFFAM, Director
Forest Pest Management

cc: Jim Olsen, HO, Rec.
Jim Pollock, HO, Rec.
Susan Wong, Olympic SO FPM
Jeff Amoss, Quinault RD
Gerry Dixon, Quinault RD

United States Department of Agriculture — Forest Service

QUINAULT R.D.

To: 2330 Developed Sites

Date: November 13, 1981

Subject: Willaby Campground Rehabilitation

To: Forest Supervisor, Olympic N.F.

ATTENTION: Bob Burns - Recreation & Lands Staff

On October 22, 1981, Suzi Wong, Forest Landscape Architect, Jeff Amoss, District ORA, and Pete Erben, Recreation Technician, located permanent photographic points for the purpose of moniorting the proposed Vegatative Management Plan in Willaby Campground. Each point was located at ground level with a yellow plastic survey marker attached to ½" steel rebar driven 18" into the ground. Each plastic marker was also stamped with a "PP" and a number (indicating a located photo point).

The following is a list of the 13 photo points and their respective locations:

EAST RIDGE 1

Photo Point #1 - Located 5 feet south of the campground road opposite camp unit #1. It is located 16 feet east (58 degrees) from a 24" dbh hemlock tree and 32 feet south (158 degrees) from a large cedar stump adjacent to the camp unit #1 parking spur. The direction of the photo is northwest through the east ridge unit.

SOUTH SCREEN 2

Photo Point #2 - Located 55 feet northwest of camp unit #3. It is located 28 feet northeast (44 degrees) from an 18" dbh hemlock and 12 feet east (96 degrees) from a 10" dbh cedar. The direction of the photo is east. This photo will monitor the new proposed campground road entrance and the south screen unit.

EAST RIDGE 2

Photo Point #3 - Located 55 feet northwest of the parking spur in camp unit #3. It is located 9 feet southeast (126 degrees) from a 16" dbh Douglas-fir and 24 feet north (18 degrees) from a 24" dbh hemlock. The direction of the photo is southeast through the east ridge unit.

EAST SCREEN 1

Photo Point #4 - Located 20 feet north of the parking spur at camp unit #4. It if located 7 feet southeast (146 degrees) from an 18" dbh Douglas-fir and 26 feet south (208 degrees) of a 10" dbh cedar. The direction of the photo is east and will provide the opportunity to monitor the recreation residence adjacent to the campground and the east end screen unit.

EAST TRAIL 1

Photo Point #5 - Located 5 feet south of the Quinault Loop Trail, lakeshore segment. Approximately 250 feet east of camp unit #6. It is located 21 feet east (80 degrees) from a 30" dbh Douglas-fir and 7 feet north (0 degrees) from a 30" dbh cedar. The direction of the photo is west toward Lake Quinault through the east trail unit.

EAST TRAIL 2
Photo Point #6 - Located 3 feet southeast of the campground road opposite camp unit #6. It is located 6 feet west (244 degrees) from a 36" dbh Douglas-fir and 31 feet south (190 degrees) from a 30" dbh cedar near the trail head. The direction of the photo is northeast and will monitor the existing trailhead adjacent to camp unit #6 and he east trail unit.

LAKESIDE 1
Photo Point #7 - Located 3 feet southeast of the campground road opposite camp unit #7. It is located 36 feet southeast (146 degrees) from a 16 dbh Sitka spruce and 70 feet northeast (65 degrees) from a 48" dbh Sitka spruce. The direction of the photo is west through the lakeside unit.

LAKESIDE 2
Photo Point #8 - Located 12 feet north of the campground road adjacent to camp unit #11. It is located 18 feet east (92 degrees) from a 48" dbh hemlock and 6 feet east of a 60" dbh fallen Sitka spruce log. The direction of the photo is west through the lakeside unit.

LAKESIDE 3 **Note:** An additional photo should be taken from this photo point looking south. This will provide an accurate record of vegatative management activities around the large comfort station.

ISLAND 1
Photo Point #9 - Located 5 feet south of the campground road opposite camp unit #13. It is located 22 feet southeast (148 degrees) from a hemlock stump and 6 feet east (70 degrees) from a 30" dbh hemlock. The direction of the photo is east toward the island unit.

WEST TRAIL 1
Photo Point #10 - Located 8 feet north of the campground road near the lower pay station. It is located 40 feet southeast (160 degrees) from the standpipe at the well site and 15 feet southwest (214 degrees) from the pay station deposit vault. The direction of the photo is southeast and will monitor the trailhead near camp unit #14 and the west trail unit.

WEST TRAIL 2
Photo Point #11 - Located on Willaby Creek trail bridge on the Quinault Loop Trail south of the boat launch area. It is located on the bridge railing 15 feet east of the west bank of Willaby Creek. (Note: The yellow plastic cap has been nailed directly to the outside of the bridge railing on the downstream side of the bridge.) The direction of the photo is north through the west trail unit.

SOUTH SCREEN 1
Photo Point #12 - Located 3 feet north of the water shut off valve near the large comfort station. It is located 8 feet north of the campground road adjacent to a 8" dbh hemlock and a 5" dbh cedar. The direction of the photo is east and will monitor the south screen unit between the campground road and the South Shore Road above.

BIG TREE 1
Photo Point #13 - Located 70 feet north of the campground road at the existing entrance. It is located 7 feet northeast (52 degrees) from a 40" dbh hemlock and 34 feet south (206 degrees) from a 30" dbh cedar. The direction of the photo is north through the big tree unit.

Additional photo points for the bikini beach, island and west end screen units will be located at a future time. The effects of the Willaby Campground rehabilitation project would make location of permanent photo points difficult in these areas.

Jeffrey S. Amoss

for LYNN A. LEPPANEN
District Ranger

Enclosure

cc: Bob Burns
Suzi Wong
Gerry Dixon
Bill Hathaway
Jeff Amoss
Pete Erben